What is claimed is:

1. A catalyst comprising a catalytically active composition which contains a phase A and a phase B in the form of three-dimensional regions delimited from their local environment owing to their different chemical composition from their local environment, wherein phase A is a silver-vanadium oxide bronze and phase B a mixed oxide phase based on titanium dioxide and vanadium pentoxide.

2. The catalyst according to claim 1, wherein the catalytically active composition is applied to an inert support.

3. The catalyst according to claim 1 or 2, wherein phases A and B are distributed relative to one another as in a mixture of finely divided A and finely divided B.

4. The catalyst according to claim 2, wherein phases A and B are arranged relative to one another as concentric shells.

5. The catalyst according to any of the preceding claims, wherein the weight ratio of phase A to phase B is in the range from 85:15 to 95:5.

6. The catalyst according to any of the preceding claims, wherein phase A has a composition which is obtainable by calcining a multimetal oxide of the general formula I

$$Ag_{a-c}M^1_cV_2O_d * e\ H_2O \qquad I$$

where

a has a value from 0.3 to 1.9,

M^1 is at least one metal selected from alkali metals and alkaline earth metals, Bi, Tl, Cu, Zn, Cd, Pb, Cr, Au, Al, Fe, Co, Ni, Mo, Nb, Ce, W, Mn, Ta, Pd, Pt, Ru and/or Rh,

c is a value from 0 to 0.5, with the proviso that $(a-c) \geq 0.1$,

d is a number which is determined by the valency and frequency of the elements in the formula I other than oxygen, and

e has a value from 0 to 20.

7. The catalyst according to any of the preceding claims, wherein phase B has a composition of the formula II

$$V_xTi_{1-x}M^2_yM^3_wO_z \qquad II$$

where

M^2 is at least one alkali metal;

M^3 is an element of main group 5 of the Periodic Table of the Elements,
x has a value from 0.001 to 0.2,
y has a value from 0 to 0.01,
w has a value from 0 to 0.02, and
z is a number which is determined by the valency and frequency of the elements in the formula II other than oxygen.

8. A process for preparing the catalyst according to claim 3, in which a powder which comprises phase A, a precursor therefor or sources of the elemental constituents thereof, and a powder B which comprises phase B, a precursor therefor or sources of the elemental constituents thereof are mixed and applied to an inert support.

9. A process for preparing the catalyst according to claim 4, in which (i) phase A, a precursor therefor or sources of the elemental constituents thereof and (ii) phase B, a precursor therefor or sources of the elemental constituents thereof are applied successively to an inert support.

10. A process for preparing aldehydes, carboxylic acids and/or carboxylic anhydrides, in which a gaseous stream which comprises an aromatic or heteroaromatic hydrocarbon and a molecular oxygen-containing gas are contacted at elevated temperature with the catalyst according to any of claims 1 to 7.

11. The process according to claim 10, in which the gaseous stream is passed successively over a bed of a catalyst disposed downstream and a bed of a catalyst disposed upstream, the bed of the catalyst disposed upstream containing the catalyst according to any of claims 1 to 7 and the bed of the catalyst disposed upstream containing at least one catalyst whose catalytically active composition consists of a mixed oxide phase based on titanium dioxide and vanadium pentoxide.

12. The process according to claim 10 or 11, in which the aromatic hydrocarbon oxidized is o–xylene or naphthalene or a mixture of o-xylene and naphthalene to give phthalic anhydride.